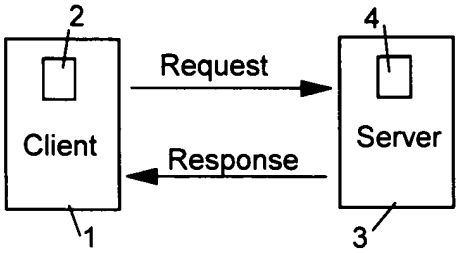

FIG. 1A

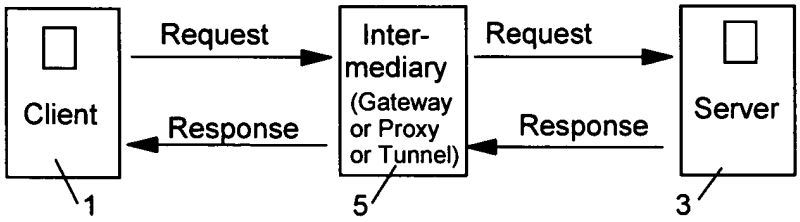

FIG. 1B

```
POST /webapp HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
Content-Length: 21

<any data to be sent>
```

FIG. 2

```
POST /webapp HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
Content-Length: 21
X-Certificate: <requestor certificate>
X-Signature: <digital signature>

<any data to be sent>
```

FIG. 3

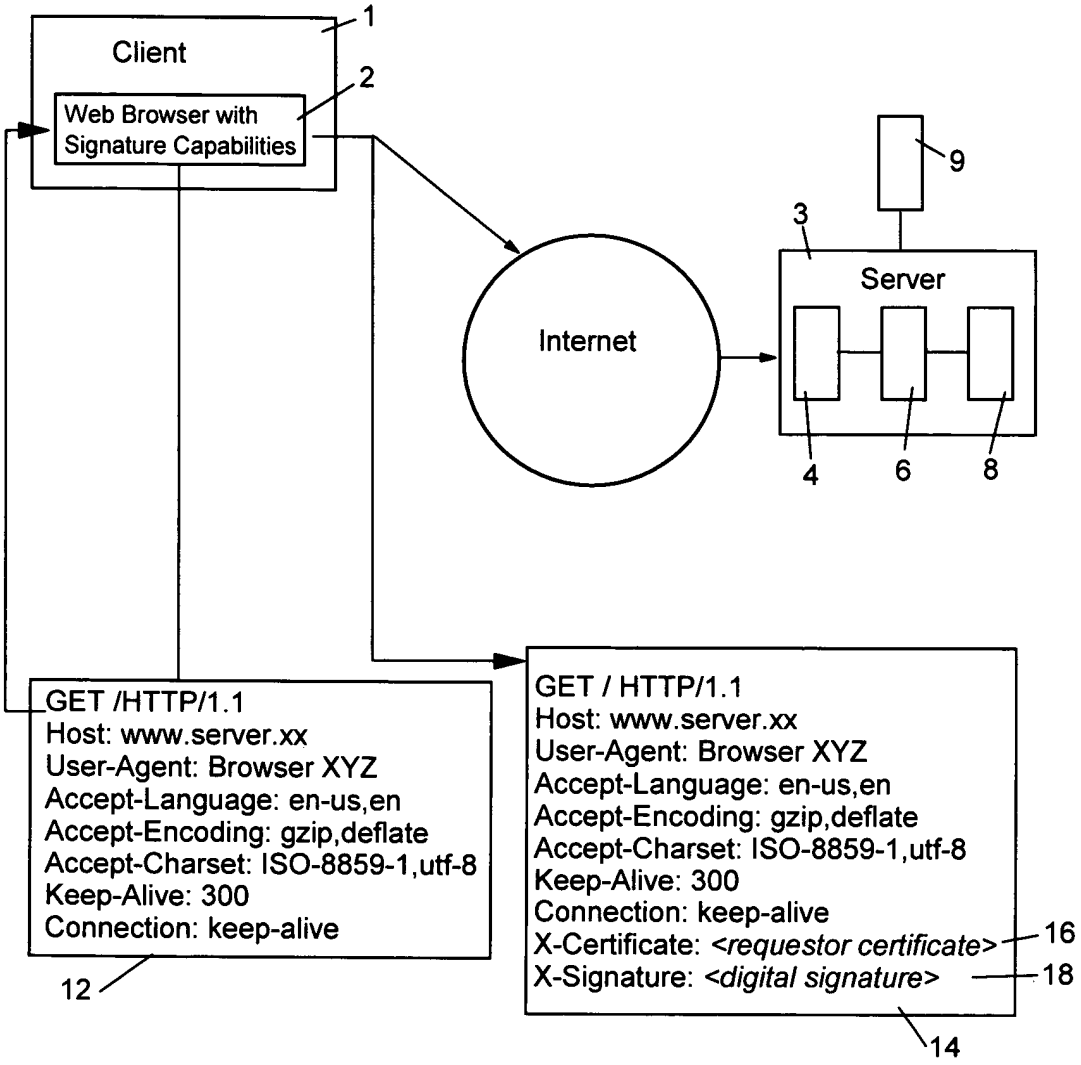
Client
1
2
Web Browser with Signature Capabilities
9
3
Server
Internet
4
6
8
GET /HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
12
GET / HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
X-Certificate: <requestor certificate>
16
X-Signature: <digital signature>
18
14

FIG. 4A

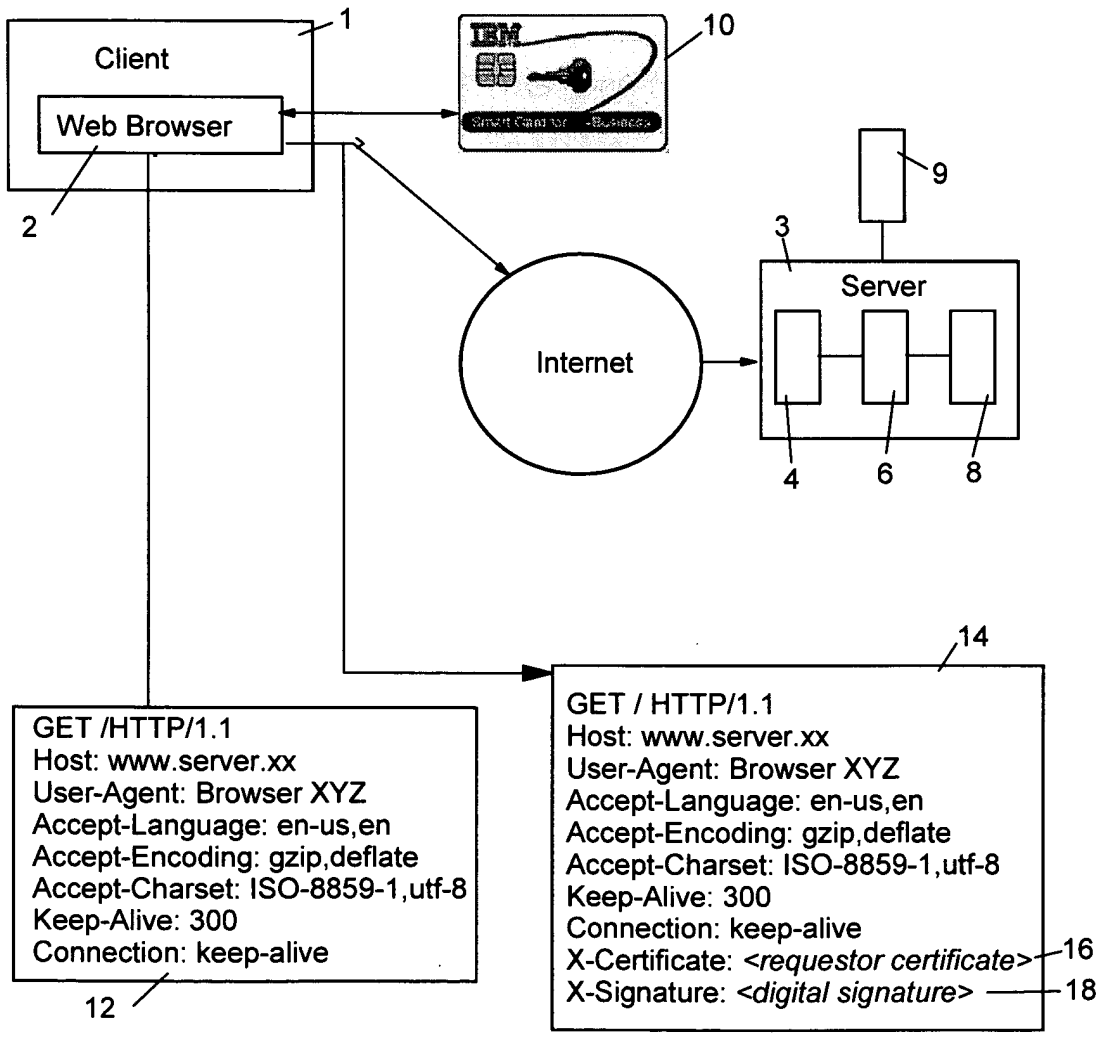
Client
Web Browser
1
2
10
9
3
Server
Internet
4
6
8
14
GET /HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
12
GET / HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
X-Certificate: <requestor certificate>
16
X-Signature: <digital signature>
18

FIG. 4B

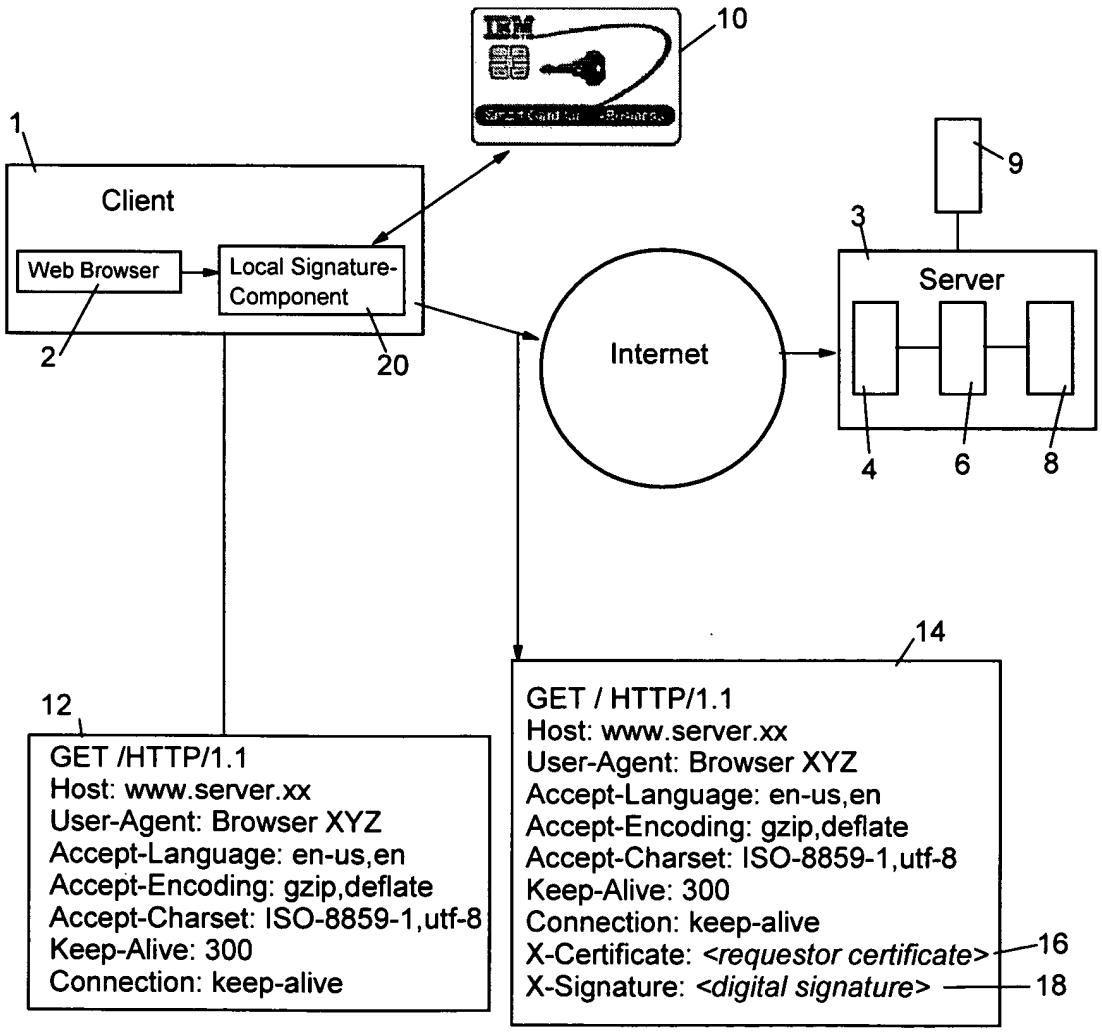
IBM
10
1
Client
Web Browser
Local Signature-Component
2
20
9
3
Server
Internet
4
6
8
14
12
GET /HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
GET / HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
X-Certificate: <requestor certificate>
16
X-Signature: <digital signature>
18

FIG. 4C

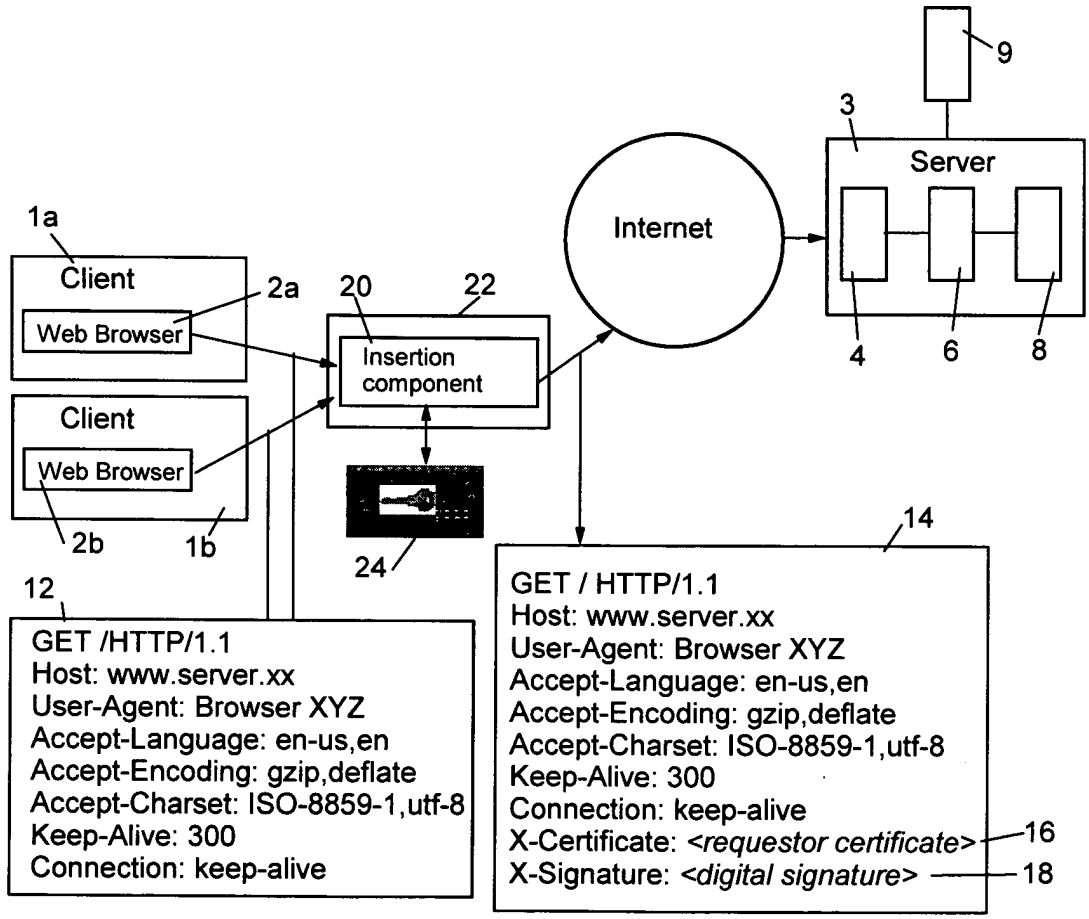
9
3
Server
Internet
1a
Client
Web Browser
2a
20
22
Insertion component
4
6
8
Client
Web Browser
2b
1b
24
14
12
GET /HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
GET / HTTP/1.1
Host: www.server.xx
User-Agent: Browser XYZ
Accept-Language: en-us,en
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8
Keep-Alive: 300
Connection: keep-alive
X-Certificate: <requestor certificate>
16
X-Signature: <digital signature>
18

FIG. 4D

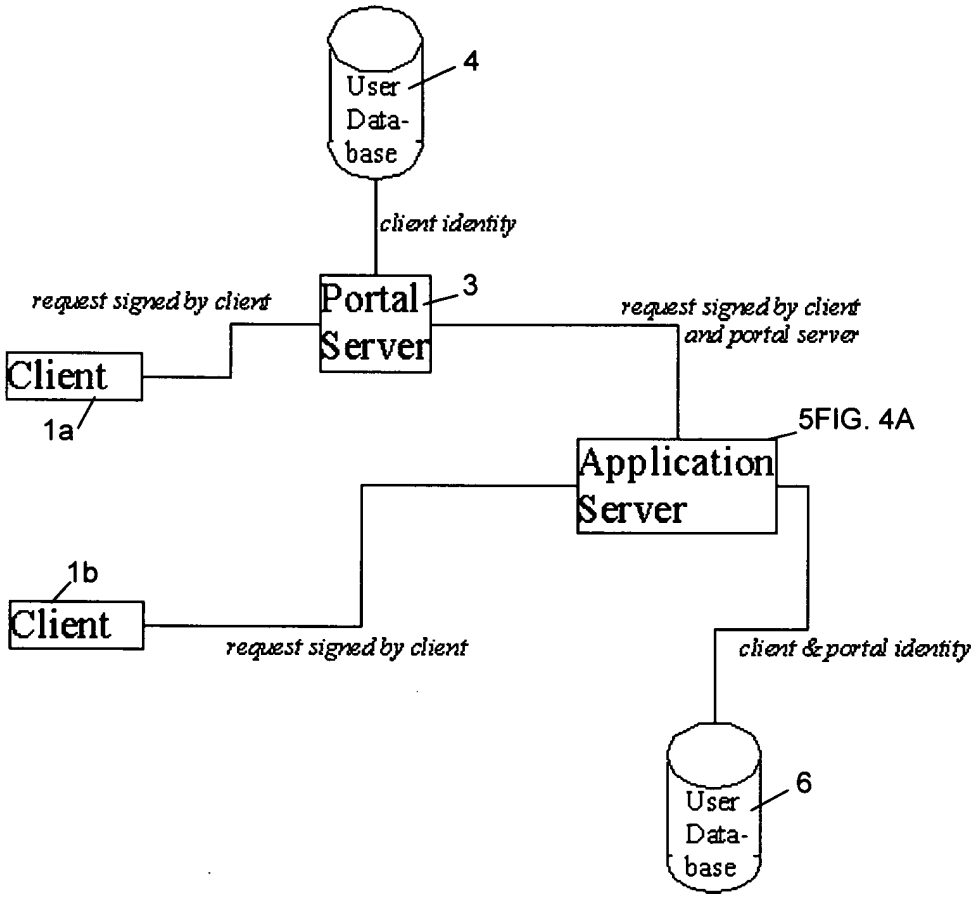
User Data-base
4
client identity
request signed by client
Portal Server
3
request signed by client and portal server
Client
1a
5FIG. 4A
Application Server
1b
Client
request signed by client
client & portal identity
User Data-base
6

FIG. 5

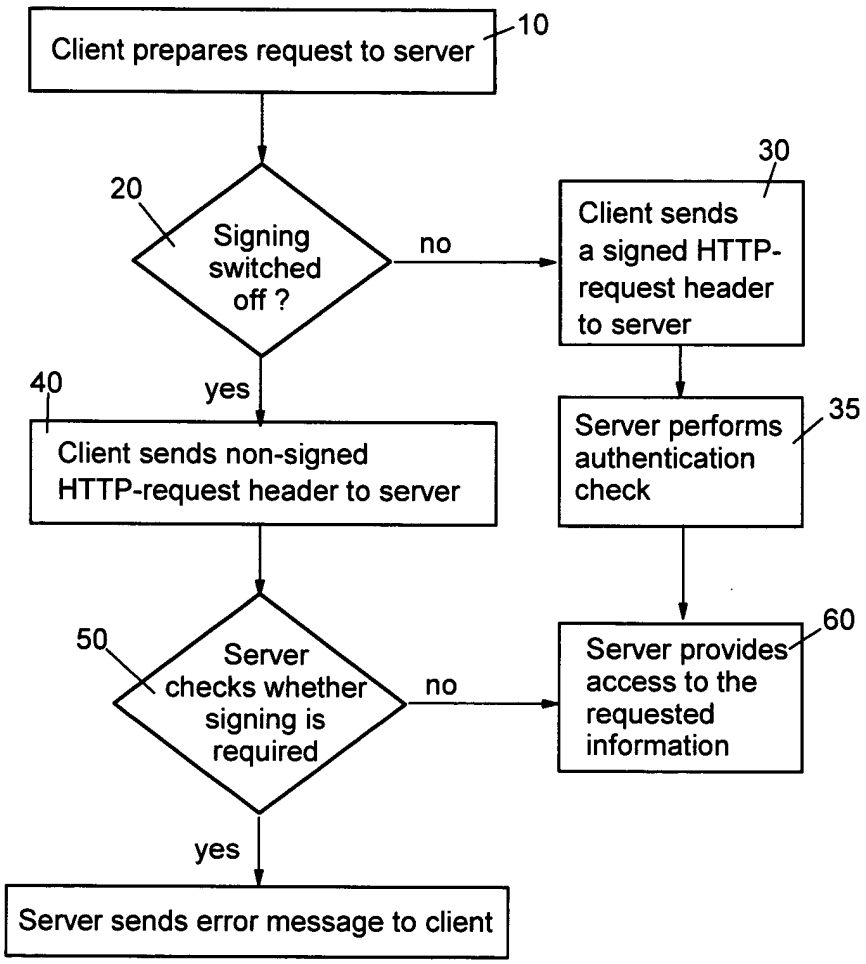
Client prepares request to server
10
20
Signing switched off ?
no
30
Client sends a signed HTTP-request header to server
yes
40
Client sends non-signed HTTP-request header to server
Server performs authentication check
35
50
Server checks whether signing is required
no
60
Server provides access to the requested information
yes
Server sends error message to client

FIG. 6

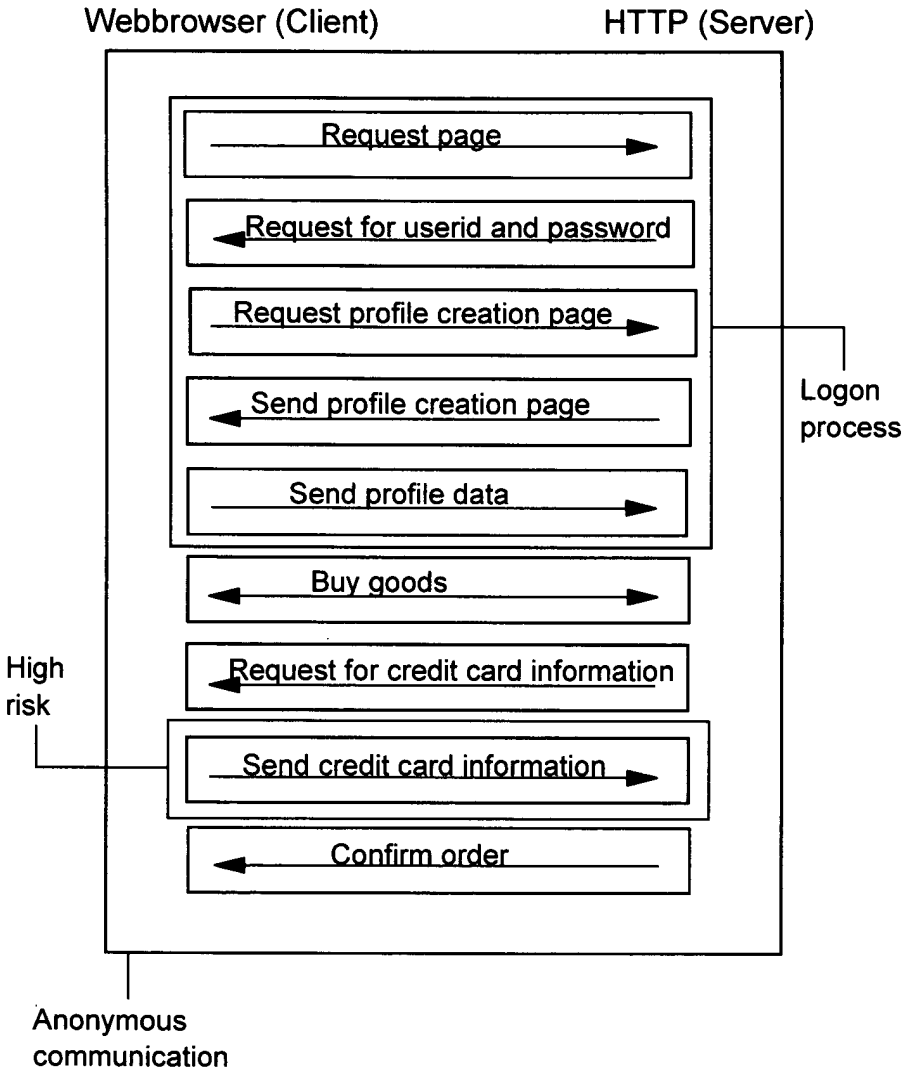
Webbrowser (Client)
HTTP (Server)
Request page
Request for userid and password
Request profile creation page
Send profile creation page
Send profile data
Buy goods
Request for credit card information
Send credit card information
Confirm order
Logon process
High risk
Anonymous communication

FIG. 7A

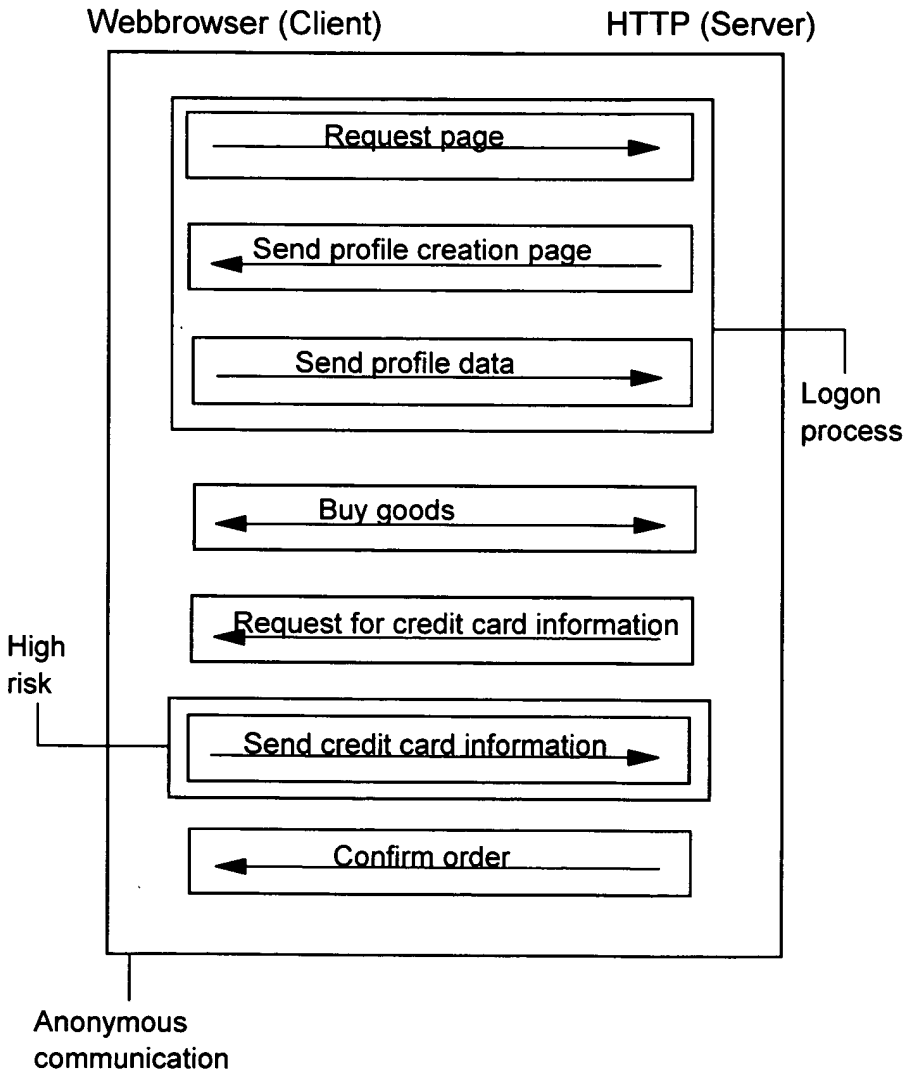
Webbrowser (Client)
HTTP (Server)
Request page
Send profile creation page
Send profile data
Logon process
Buy goods
Request for credit card information
High risk
Send credit card information
Confirm order
Anonymous communication

FIG. 7B